

when blown, can irritate the eyes, skin, and respiratory system. Workers follow strict safety guidelines to protect themselves from the dangers of insulating irritants, keeping work areas well ventilated, wearing protective suits, masks, and respirators, and taking decontamination showers when necessary.

### Employment

Insulation workers held about 67,000 jobs in 1998. The construction industry employed 9 out of 10; most worked for insulation or other construction trades contractors. Small numbers of insulation workers held jobs in the Federal Government, in wholesale trade, and in ship-building and other manufacturing industries that have extensive installations for power, heating, and cooling. Most worked in urban areas. In less populated areas, carpenters, heating and air-conditioning installers, or drywall installers may do insulation work.

### Training, Other Qualifications, and Advancement

Most insulation workers learn their trade informally on the job, although some workers complete formal apprenticeship programs. For entry jobs, insulation contractors prefer high school graduates who are in good physical condition and licensed to drive. High school courses in blueprint reading, shop math, sheet-metal layout, and general construction provide a helpful background. Applicants seeking apprenticeship positions must have a high school diploma or its equivalent, and be at least 18 years old.

Trainees who learn on the job receive instruction and supervision from experienced insulation workers. Trainees begin with simple tasks, such as carrying insulation or holding material while it is fastened in place. On-the-job training can take up to 2 years, depending on the work. Learning to install insulation in homes generally requires less training than insulation application in commercial and industrial settings. As they gain experience, trainees receive less supervision, more responsibility, and higher pay.

In contrast, trainees in formal apprenticeship programs receive in-depth instruction in all phases of insulation. Apprenticeship programs may be provided by a joint committee of local insulation contractors and the local union of the International Association of Heat and Frost Insulators and Asbestos Workers, to which many insulation workers belong. Programs normally consist of 4 years of on-the-job training coupled with classroom instruction, and trainees must pass practical and written tests to demonstrate knowledge of the trade.

Skilled insulation workers may advance to supervisor, shop superintendent, insulation contract estimator, or set up their own insulation business.

### Job Outlook

Opportunities for insulation workers are expected to be favorable. Employment of insulation workers is expected to increase more slowly than the average for all occupations through the year 2008, but replacement needs are usually high due to the many workers who transfer to other occupations. Concerns about the efficient use of energy to heat and cool buildings will result in growth in demand for insulation workers in the construction of new residential, industrial, and commercial buildings. In addition, renovation and efforts to improve insulation in existing structures also will increase demand.

Despite growth in demand, replacement needs will account for most job openings. Each year thousands of jobs will become available as insulation workers transfer to other occupations or leave the labor force. There are no strict training requirements for entry, and many people with limited skills work as insulation workers for a short time and then move on to other types of work, creating many job openings.

Insulation workers in the construction industry may experience periods of unemployment because of the short duration of many construction projects and the cyclical nature of construction activity. Workers employed in industrial plants generally have more stable employment because maintenance and repair must be done on a continuing basis. Most insulation is applied after buildings are enclosed.

### Earnings

In 1998, median hourly earnings of insulation workers were \$12.25. The middle 50 percent earned between \$9.71 and \$15.94. The lowest 10 percent earned less than \$7.52 and the highest 10 percent earned more than \$22.62. Median hourly earnings in the industries employing the largest number of insulation workers in 1997 are shown below:

Miscellaneous special trade contractors .....	\$12.90
Masonry, stonework, and plastering .....	10.80

According to the limited information available, average hourly earnings—including benefits—for insulation workers who belonged to a union and worked full time, ranged between \$22.10 and \$48.70 in 1998. Insulation workers in New York, Boston, San Francisco, Chicago, Los Angeles, Philadelphia, and other large cities received the highest wages. Insulation workers doing commercial and industrial work earn substantially more than those working in residential construction, which does not require as much skill.

### Related Occupations

Insulation workers combine their knowledge of insulation materials with the skills of cutting, fitting, and installing materials. Workers in occupations involving similar skills include carpenters, carpet installers, drywall installers and finishers, floor layers, roofers, and sheet-metal workers and duct installers.

### Sources of Additional Information

For information about training programs or other work opportunities in this trade, contact a local insulation contractor; a local chapter of the International Association of Heat and Frost Insulators and Asbestos Workers; the nearest office of the State employment service or State apprenticeship agency, or:

- ✦ International Association of Heat and Frost Insulators and Asbestos Workers, 1776 Massachusetts Ave. NW., Suite 301, Washington, DC 20036
- ✦ National Insulation Contractors Association, 99 Canal Center Plaza, Suite 222, Alexandria, VA 22314.
- ✦ Insulation Contractors Association of America, 1321 Duke St., Suite 303, Alexandria, VA 22314.

## Painters and Paperhangers

(O\*NET 87402A and 87402B)

### Significant Points

- Painters and paperhangers are one of the larger construction occupations.
- Most painters and paperhangers learn their craft informally on the job as helpers to experienced painters.
- Opportunities for jobs should be good due to high job turnover in the occupation.

### Nature of the Work

Paint and wall coverings make surfaces clean, attractive and bright. In addition, paints and other sealers protect outside walls from wear caused by exposure to the weather. Although some people do both painting and paperhanging, each requires different skills.

*Painters* apply paint, stain, varnish, and other finishes to buildings and other structures. They choose the right paint or finish for the surface to be covered, taking into account durability, ease of handling, method of application, and customers' wishes. Painters first prepare the surfaces to be covered so the paint will adhere properly. This may require removing the old coat by stripping, sanding, wire brushing, burning, or water and abrasive blasting. Painters also wash walls and trim to remove dirt and grease, fill nail holes and cracks, sandpaper rough spots,



*Painters prepare the surfaces to be covered so the paint will adhere properly.*

and brush off dust. On new surfaces, they apply a primer or sealer to prepare the surface for the finish coat. Painters also mix paints and match colors, relying on knowledge of paint composition and color harmony. In large paint shops or hardware stores, this function is automated.

There are several ways to apply paint and similar coverings. Painters must be able to choose the right paint applicator for each job, depending on the surface to be covered, the characteristics of the finish, and other factors. Some jobs only need a good bristle brush with a soft, tapered edge; others require a dip or fountain pressure roller; still others can best be done using a paint sprayer. Many jobs need several types of applicators. The right tools for each job not only expedite the painter's work but also produce the most attractive surface.

When working on tall buildings, painters erect scaffolding, including "swing stages," scaffolds suspended by ropes, or cables attached to roof hooks. When painting steeples and other conical structures, they use a "bosun chair," a swinglike device.

*Paperhangers* cover walls and ceilings with decorative wall coverings made of paper, vinyl, or fabric. They first prepare the surface to be covered by applying "sizing," which seals the surface and makes the covering stick better. When redecorating, they may first remove the old covering by soaking, steaming, or applying solvents. When necessary, they patch holes and take care of other imperfections before hanging the new wall covering.

After the surface has been prepared, paperhangers must prepare the paste or other adhesive. Then they measure the area to be covered, check the covering for flaws, cut the covering into strips of the proper size, and closely examine the pattern to match it when the strips are hung.

The next step is to brush or roll the adhesive onto the back of the covering, then to place the strips on the wall or ceiling, making sure the pattern is matched, the strips are hung straight, and the edges butted together to make tight, closed seams. Finally, paperhangers smooth the strips to remove bubbles and wrinkles, trim the top and bottom with a razor knife, and wipe off any excess adhesive.

### Working Conditions

Most painters and paperhangers work 40 hours a week or less; about 1 out of 10 works part time. Painters and paperhangers must stand for long periods. Their jobs also require a considerable amount of climbing and bending. These workers must have stamina because much of the work is done with their arms raised overhead. Painters often work outdoors, but seldom in wet, cold, or inclement weather.

Painters and paperhangers risk injury from slips or falls off ladders and scaffolds. They may sometimes work with materials that can be hazardous if masks are not worn or if ventilation is poor. Some painting jobs can leave a worker covered with paint.

### Employment

Painters and paperhangers held about 476,000 jobs in 1998; most were painters. Almost 2 out of every 3 painters and paperhangers work for contractors engaged in new construction, repair, restoration, or remodeling work. In addition, organizations that own or manage large buildings, such as apartment complexes, employ maintenance painters, as do some schools, hospitals, factories, and government agencies.

Self-employed independent painting contractors accounted for over 40 percent of all painters and paperhangers, significantly greater than the proportion of building trades workers in general.

### Training, Other Qualifications, and Advancement

Painting and paperhanging are learned through apprenticeship or informal, on-the-job instruction. Although training authorities recommend completion of an apprenticeship program as the best way to become a painter or paperhanger, most painters learn the trade informally on the job as a helper to an experienced painter. Few opportunities for informal training exist for paperhangers because few paperhangers have a need for helpers.

The apprenticeship for painters and paperhangers consists of 3 to 4 years of on-the-job training, in addition to 144 hours of related classroom instruction each year. Apprentices receive instruction in color harmony, use and care of tools and equipment, surface preparation, application techniques, paint mixing and matching, characteristics of different finishes, blueprint reading, wood finishing, and safety.

Whether a painter learns the trade through a formal apprenticeship or informally as a helper, on-the-job instruction covers similar skill areas. Under the direction of experienced workers, trainees carry supplies, erect scaffolds, and do simple painting and surface preparation tasks while they learn about paint and painting equipment. Within 2 or 3 years, trainees learn to prepare surfaces for painting and paperhanging, to mix paints, and to apply paint and wall coverings efficiently and neatly. Near the end of their training, they may learn decorating concepts, color coordination, and cost-estimating techniques. In addition to learning craft skills, painters must become familiar with safety and health regulations so their work is in compliance with the law.

Apprentices or helpers generally must be at least 16 years old and in good physical condition. A high school education or its equivalent, with courses in mathematics, is usually required to enter an apprenticeship program. Applicants should have good manual dexterity and good color sense.

Painters and paperhangers may advance to supervisory or estimating jobs with painting and decorating contractors. Many establish their own painting and decorating businesses.

### Job Outlook

Employment of painters and paperhangers is expected to grow more slowly than the average for all occupations through the year 2008, as the level of new construction increases slowly and the stock of buildings and other structures that require maintenance and renovation grows. Painting is very labor intensive and not suitable to the kinds of technological changes that might make workers more productive and restrict employment growth.

In addition to job openings created by rising demand for the services of these workers, thousands of jobs will become available each year as painters and paperhangers transfer to other occupations or leave the labor force. There are no strict training requirements for entry, so many people with limited skills work as painters or paperhangers for a short time and then move on to other types of work, creating many job openings. Many fewer openings will occur for paperhangers because the number of these jobs is comparatively small.

Because there are no strict training requirements, prospects for jobs as painters or paperhangers should be favorable. However, job seekers considering these occupations should expect some periods of unemployment, especially until they become fully skilled. Many construction projects are of short duration, and construction activity is cyclical.

and seasonal in nature. Remodeling, restoration, and maintenance projects, however, often provide many jobs for painters and paperhangers even when new construction activity declines. The most versatile painters and skilled paperhangers generally are most able to keep working steadily during downturns in the economy.

### Earnings

In 1998, median hourly earnings of painters and paperhangers were \$12.07. The middle 50 percent earned between \$9.81 and \$16.16. The lowest 10 percent earned less than \$7.50 and the highest 10 percent earned more than \$21.40. Median hourly earnings in the industries employing the largest numbers of painters and paperhangers in 1997 are shown below:

Local government, except education and hospitals .....	\$16.90
Painting and paper hanging .....	11.60
Miscellaneous special trade contractors .....	11.40
Residential building construction .....	10.70
Real estate operators and lessors .....	9.20

In general, paperhangers earn more than painters. Earnings for painters may be reduced on occasion because of bad weather and the short-term nature of many construction jobs.

Hourly wage rates for apprentices usually start at 40 to 50 percent of the rate for experienced workers and increase periodically.

Some painters and paperhangers are members of the International Brotherhood of Painters and Allied Trades. Some maintenance painters are members of other unions.

### Related Occupations

Painters and paperhangers apply various coverings to decorate and protect wood, drywall, metal, and other surfaces. Other occupations in which workers apply paints and similar finishes include billboard posterers, metal sprayers, undercoaters, and transportation equipment painters.

### Sources of Additional Information

For details about painting and paperhanging apprenticeships or work opportunities, contact local painting and decorating contractors; a local office of the International Brotherhood of Painters and Allied Trades; a local joint union-management apprenticeship committee; or an office of the State apprenticeship agency or State employment service.

For general information about the work of painters and paperhangers, contact:

- ☛ Associated Builders and Contractors, 1300 North 17th St., Rosslyn, VA 22209.
- ☛ International Brotherhood of Painters and Allied Trades, 1750 New York Ave. NW., Washington, DC 20006.
- ☛ Home Builders Institute, National Association of Home Builders, 1201 15th St. NW., Washington, DC 20005.

## Plasterers and Stucco Masons

(O\*NET 87317)

### Significant Points

- Plasterers and stucco masons are projected to be one of the fastest growing occupations in construction trades, increasing about as fast as the average for all occupations.
- The use of plaster in new building construction is regaining popularity because of its durability, finish, and fire-retardant qualities.
- Plastering usually is learned on the job, either through a formal apprenticeship program or by working as a helper.

### Nature of the Work

Plastering—one of the oldest crafts in the building trades—is enjoying resurgence in popularity because of the introduction of newer, less costly materials and techniques. Plasterers apply plaster to interior walls and ceilings to form fire-resistant and relatively sound-proof surfaces. They also apply plaster veneer over drywall to create smooth or textured abrasion-resistant finishes. In addition, plasterers install prefabricated exterior insulation systems over existing walls—for good insulation and interesting architectural effects—and cast ornamental designs in plaster. Stucco masons apply durable plasters, such as polymer-based acrylic finishes and stucco to exterior surfaces. Drywall workers and lathers, a related occupation, use drywall instead of plaster, when erecting interior walls and ceilings. (See the section on drywall workers and lathers elsewhere in the *Handbook*.)

When plasterers work with interior surfaces such as cinder block and concrete, they first apply a brown coat of gypsum plaster that provides a base, followed by a second or finish coat—also called “white coat”—which is a lime-based plaster. When plastering metal lath (supportive wire mesh) foundations, they apply a preparatory, or “scratch coat,” with a trowel. They spread this rich plaster mixture into and over the metal lath. Before the plaster sets, plasterers scratch its surface with a rake-like tool to produce ridges, so the subsequent brown coat will bond tightly.

Laborers prepare a thick, smooth plaster for the brown coat. Plasterers spray or trowel this mixture onto the surface, then finish by smoothing it to an even, level surface.



*Plasterers apply durable plasters such as polymer-based acrylic finishes and stucco to exterior surfaces.*